

Notice of Allowability

Application No.

10/611,425

Examiner

Vineeta S. Panwalkar

Applicant(s)

KIM ET AL.

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 8/16/07.
2. ☒ The allowed claim(s) is/are 1-16.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of
Paper No./Mail Date 20071107.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 20071107
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Examiner's Amendment

1. Authorization for this examiner's amendment was given in a telephone interview with Mr. Paul H. Nguyen-Ba (Reg. No. 60,742) on 11/8/07.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

- 1a. The following changes to the drawings have been approved by the examiner and agreed upon by applicant:

In Fig. 7, all instances of "km" and "Km" should be changed to -- kmph -- and -- Kmph -- respectively.

In order to avoid abandonment of the application, applicant must make these above agreed upon drawing changes.

- 1b. In the specification:

- 1) On page 22, line 15, after "A speed axis", delete "[Km]" and replace with -- [Kmph] --

- 2) On page 22, line 17, after "channel speed is 20", delete "[Km]" and replace with -- [Kmph] --

- 3) On page 22, line 18, after "the channel speed is" delete "70Km" and replace with -- 70 Kmph --

Reasons for Allowance

2. Claims 1-16 are allowed. The following is an examiner's statement of reasons for allowance:
 - 2a. Regarding claim 1, prior art of record fails to show an apparatus for selecting one of an open-loop first transmit antenna diversity scheme and closed-loop second transmit antenna diversity schemes by a user equipment (UE) in a system including a Node B transmitter which includes at least two antennas and uses the first transmit antenna diversity scheme for transmitting space time transmit diversity (STTD)-encoded signals via the antennas and the second transmit antenna diversity scheme for controlling a phase of signals transmitted from the antennas in response to feedback information including relative phase difference information of the antennas from the UE, the apparatus comprising a determiner for estimating a variation speed of the first channel based on the estimated channel response, and selecting one of the first and second transmit antenna diversity schemes according to the estimated variation speed of the first channel, in combination with each and every other limitation of the claim.
 - 2b. Claims 2-4 are allowed as being dependent on claim 1.
 - 2c. Regarding claim 5, prior art of record fails to show an apparatus for selecting, by a Node B, an open-loop first transmit antenna diversity scheme and closed-loop

second transmit antenna diversity scheme comprising a Node B which includes at least two antennas and uses the first transmit antenna diversity scheme for transmitting space time transmit diversity (STTD)- encoded signals via the antennas and the second transmit antenna diversity scheme for controlling a phase of signals transmitted from the antennas in response to feedback information including relative phase difference information of the antennas from user equipment (UE) and a controller for determining a transmit antenna diversity scheme to be applied to channel signals to be transmitted by the Node B, based on the detected information, in combination with each and every other limitation of the claim.

2d. Claims 6-8 are allowed as being dependent on claim 5.

2e. Regrading claim 9, prior art of record fails to show a method for selecting one of an open-loop first transmit antenna diversity scheme and closed-loop second transmit antenna diversity scheme by a user equipment (UE) in a system including a Node B transmitter which includes at least two antennas and uses the first transmit antenna diversity scheme for transmitting space time transmit diversity (STTD)-encoded signals via the antennas and the second transmit antenna diversity scheme for controlling a phase of signals transmitted from the antennas in response to feedback information including relative phase difference information of the antennas from the UE, the method comprising the steps of

estimating a variation speed of the first channel based on the estimated channel response and selecting one of the first and second transmit antenna diversity schemes according to the estimated variation speed of the first channel, in combination with each and every other limitation of the claim.

2f. Claims 10-12 are allowed as being dependent on claim 9.

2g. Regarding claim 13, prior art of record fails to show a method for selecting, by a Node B, one of an open-loop first transmit antenna diversity scheme and closed-loop second transmit antenna diversity scheme, the method comprising the steps of detecting, from the received first channel signal, information indicating one of the first and second transmit antenna diversity schemes, selected by the UE, wherein the first transmit antenna diversity scheme is used for transmitting space time transmit diversity (STTD)-encoded signals via the antennas and the second transmit antenna diversity scheme is used for controlling a phase of signals transmitted from the antennas in response to feedback information including relative phase difference information of the antennas from a user equipment (UE); determining a transmit antenna diversity scheme to be applied to channel signals to be transmitted by the Node B, based on the detected information, in combination with each and every other limitation of the claim.

2h. Claims 14-16 are allowed as being dependent on claim 13.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:
 - Hui et al. (US 2003/0156572 A1) show a method and apparatus using the feedback information from an ARQ signal that is received to control the transmit diversity of a transmitter and provide either open-loop or closed loop diversity.
 - Dabak et al. (US 6594473 B1) show wireless system with transmitter having multiple transmit antennas and combining open loop and closed loop transmit diversities.
 - Raghothaman (US 6987952 B2) shows selection of open-loop or closed loop diversity scheme based on feedback indicating reliability of channel and speed conditions.

Contact Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vineeta S. Panwalkar whose telephone number is 571-272-8561. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

VP


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SUPERVISORY PATENT EXAMINER